

Duncan Gibb

Regulatory Assistance Project

**Hrvoje Keko**

Argovolt



Making Croatia's buildings ready for smart electrification

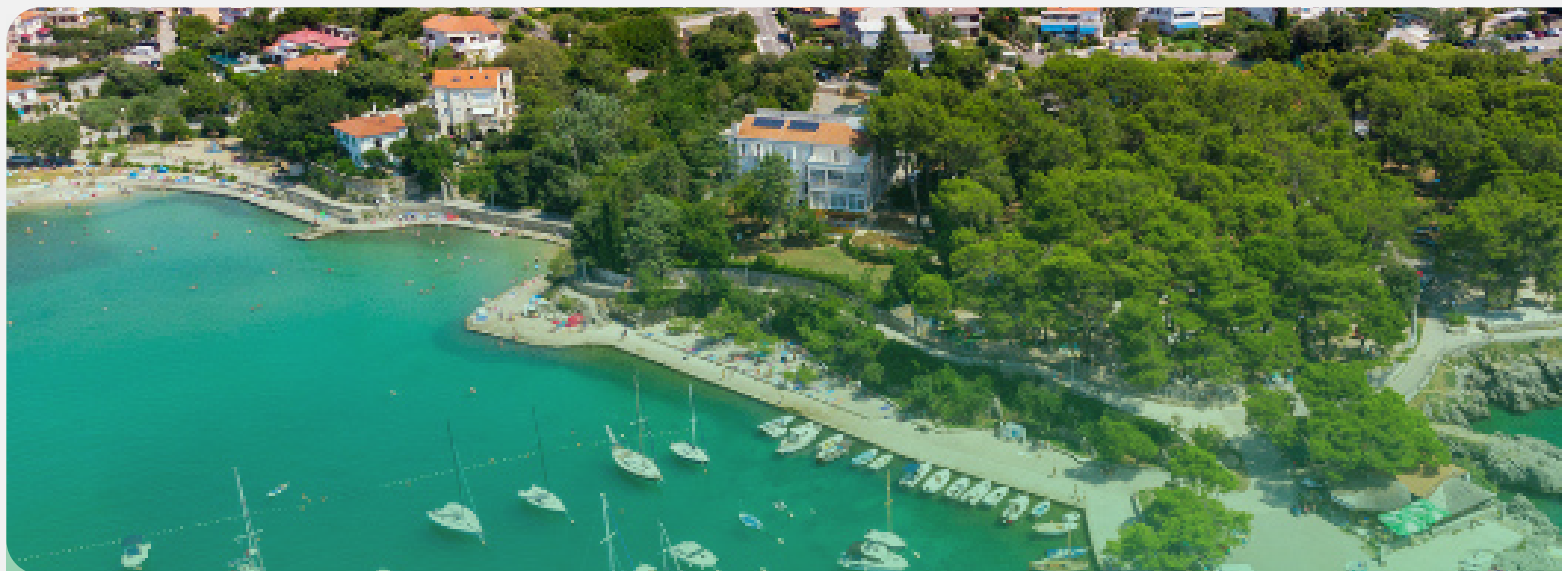
For Europe to decarbonise its building stock, the role of buildings in the energy system must change. Homes, businesses and public buildings will need to do more than passively consume energy. They must produce it as well. By making buildings a flexible interface between energy production and energy demand, as well as a valuable flexibility resource able to help stabilize the grid, the transition to clean energy will be more cost-effective, efficient and energy secure. WeForming, a project funded by the EU's Horizon Europe Programme (Grant Agreement No. 101123556), focuses on creating regulatory and business pathways to support the widespread adoption of smart buildings.

Policy framework overview

One of the key countries in the WeForming consortium is Croatia. This is a country that has seen limited success towards developing a policy framework that encourages smart buildings. Croatia is focusing on expanding its regulatory framework and starting to scale up market accessibility for flexibility services, allowing homes and businesses to engage in these markets. The country is currently involved in a smart readiness indicator test phase, aiming to adapt the European Union's common scheme to the local building stock. Aggregation services are legally permitted and in place to aid flexibility services, allowing smart buildings to potentially participate in ancillary service markets. This remains uncommon among EU countries.

Yet important barriers are slowing down the uptake of smart buildings in Croatia. The smart meter rollout pace has recently increased and in 2026 the share of metering points equipped with smart meters has surpassed 50%. Although the use of smart meters is expanding, access to live metering data remains limited. This is the case even with the Implementing Regulation (EU) 1162/2023 on interoperability requirements and non-discriminatory and transparent procedures for access to metering and consumption data in place. This limits the development of flexibility services. Additionally, the retail market is dominated by fixed-rate contracts, lowering consumer demand for automation technologies that rely on price signals to optimize energy use.

Responses to a scorecard submitted in the WeForming project highlighted a lack of clear regulatory framework, sluggish penetration of smart meters and generally low energy prices, possibly limiting the business case for flexibility.



Demo overview

The Croatian demonstration project in WeForming considers the island of Krk. Krk hosts 5% of Croatian tourism and its population increases more than fivefold in summer peak. Only a third of buildings in Krk are inhabited throughout the year with the rest seeing usage only in the summer tourist season. Krk has been a pioneer considering energy transition, and the participation of the local utility Smart Island Krk in the WeForming project builds upon that tradition.

The demo project's main challenge is to develop a solution that will be technically and financially viable in this challenging seasonal context and that will convert the Krk building fleet into active contributors to the energy grids. Demo leaders decided to develop this solution together with end-users so they could cover the large diversity of Krk buildings, and they worked with the lighthouse users that offered their buildings and equipment to develop the solution in realistic environment.

The solution relies on open-source technologies and has a hardware component, which is a scaled-down phasor measurement unit to cost effectively convert a building into a source of grid related data. Its economic viability means it fits the buildings that are not used year-round. It is a single step that converts the passive building into a source of valuable data being shared via the WeForming data space.

Policy overview and barriers

Croatia's main barriers to smart buildings include challenging access to smart meter data, the dominance of fixed-rate contracts, and the lack of a clear regulatory framework. More advanced schemes of managing data from the growing fleet of smart meters remains limited, and the existing grid already faces challenges with handling widespread distributed generation.

A second barrier lies in heating infrastructure. In large continental cities such as Zagreb and Osijek, efficient cogeneration plants already supply heat to most residents, leaving building owners little incentive to invest in alternatives like electric heat pumps when district heat remains the cheapest option. On the other hand, many buildings use forced-air gas heaters and replacing these with higher efficiency condensation gas-fired boilers is challenging in multi-apartment buildings. It requires upgrades and replacement of exhaust infrastructure which may drive a share of owners toward electric-powered heat pumps.

The coastal regions offer more flexibility, where heating demand centres on hot water, while summer cooling needs are substantial, making energy-efficient cooling units or centralised heating and cooling systems a logical fit.

Croatia's Ministry of Physical Planning, Construction, and State Assets has published guidelines for the implementation of nearly zero-energy buildings. However, there are several significant barriers to their adoption, including restrictions on innovation in the public sector due to public procurement laws, a lack of tax and local incentives, limited successful financial models, lack of experience among construction stakeholders and resistance to change, and insufficient information about the benefits for users. These challenges pose obstacles to the widespread adoption of nearly zero-energy building in Croatia, with obvious parallels to smart buildings.

Recent policy developments

In April 2026, the Croatian Energy Regulatory Agency (HERA)'s launched a public consultation on a national enabling framework for self-consumption of renewables. Prepared between October 2025 and March 2026, the document is Croatia's first formal step toward the enabling-framework obligation flowing from the EU's Renewable Energy Directive, and it is explicitly framed as a starting point rather than a finished instrument. It assesses unjustified barriers to self-consumption - grouped into social, institutional, legal and regulatory, administrative, technical, and economic categories - across the same participant types covered in the regulatory framework (individual self-consumers, jointly-acting self-consumers, final customers with own production, and self-supply facility users), and addresses energy sharing within multi-apartment buildings directly. Notably, HERA concedes that key provisions of its law on renewable energy were transposed almost verbatim from the EU directives and are consequently too generic for Croatian conditions, despite two amendments since 2021.

The consultation's view on technical barriers is most relevant to smart buildings specifically. HERA found that the distribution system operator (HEP-ODS) is not yet equipped to support collective self-consumption because its IT systems are not sufficiently independent or modern, smart-meter penetration is still too low, and the grid offers limited hosting capacity alongside inadequate observability and controllability of the distribution network.

The consultation described connection procedures and deadlines as unclear, too slow, and inconsistently applied across distribution areas, reinforcing why distributed renewables in Croatia remain almost entirely in single-family homes rather than the multi-unit and commercial buildings most relevant to iGFBs. Regarding the flexibility market for end-users, only those connected to the transmission network can offer flexibility services directly while those connected to distribution grid could offer the service via an intermediary such as an aggregator.

As discussed, in Croatia distributed renewable energy sources are almost entirely installed in single-family homes. If residents in a multi-unit building wish to incorporate renewable energy sources or offer flexibility, they need to form a type of community known as a “collective active consumer”. These distinctions are important because they represent a logical framework for citizen participation. Energy communities have been legally recognized since 2023, and officially there are three registered in Croatia, as per HERA’s registry. On a positive note, in June 2026 the Energy Community of Northern Adriatic has become the first fully functional energy community in Croatia has entered full service and first kilowatt-hours have been exchanged as of July 2026.

There is a lack of consumer incentives to enter these groups with such benefits related to investment costs poorly communicated or absent, while the administrative burden to establish them is significant. Nonetheless the success of such groups will likely be important to the advancement of flexibility offers and smart building integration in Croatia.

Recommendations

To address these issues, HERA suggests further accelerating smart-meter rollout, modernising the DSO's systems and ten-year development plans around an active distribution grid, and clarifying connection rules under stronger regulatory oversight. It also recommends abandoning the administratively set value for surplus electricity fed into the grid in favour of market-linked pricing, removing retail price caps, and developing tailored finance instruments (low- or zero-interest loans, state guarantee schemes, micro-credit) for self-consumers. Its headline institutional proposal is a national “citizen energy office” — a one-stop shop modelled on Austria, Ireland, Italy, the Netherlands, and the Brussels region — to provide information, templates, and registration support. These directions align closely with ACER's December 2023 recommendations to Croatia (a comprehensive framework for new market participants, enhanced smart-meter deployment, and fairer network charges for active customers), and the transposition of the IEMD (Directive (EU) 2024/1711) is identified as the practical vehicle for revisiting the energy-community framework.

The ACER report from December 2023 advised Croatia to develop a comprehensive national legal framework for new market participants, enhance smart meter deployment, and ease capacity mechanism restrictions. Croatia is also encouraged to stimulate retail market competition and ensure fair network charges for active customers. Monitoring retail electricity contracts and general management of taxes and levies for active customers are also highlighted in the report.

Outlook

The number of electric vehicles in Europe will continue to grow rapidly. Each vehicle increases electricity demand but also adds potential flexibility.

If integrated intelligently, electric vehicles can absorb surplus renewable energy, reduce peak loads, and provide services to the grid. The key challenge lies in coordination across devices, buildings, and districts, supported by interoperable digital platforms.

By combining smart buildings, interoperable data infrastructures, and coordinated control strategies, electric vehicles can evolve from a potential grid challenge into a central component of a resilient and decentralised energy system.



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